

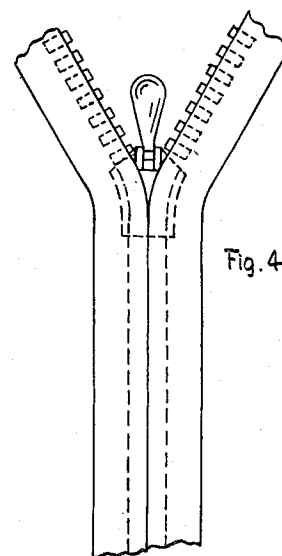
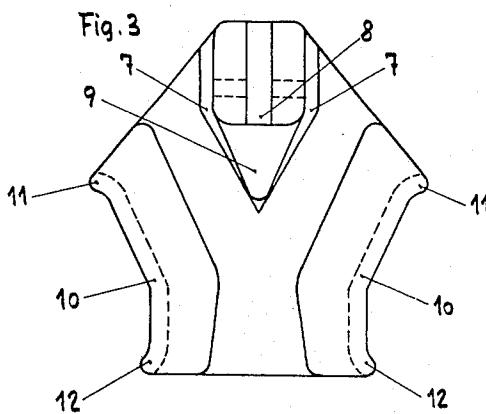
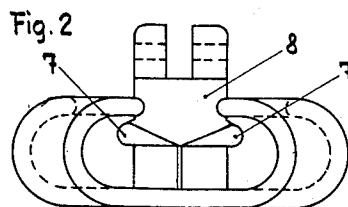
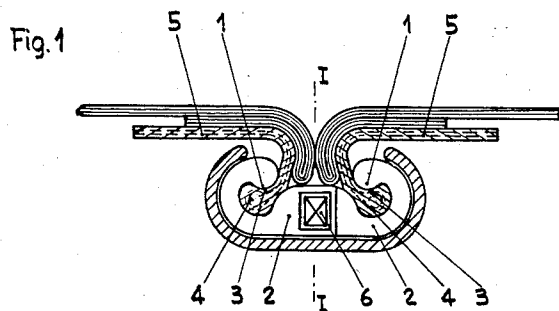
March 20, 1956

J. HUG

2,738,560

CONCEALED SLIDE-FASTENERS

Filed March 19, 1953



INVENTOR:
JACQUES HUG
BY Leon M. Strauss
ATT.

1

2,738,560

CONCEALED SLIDE-FASTENERS

Jacques Hug, Zurich, Switzerland, assignor to Fermeture Invisible S. A., Tangier, North Africa, a corporation of Tangier

Application March 19, 1953, Serial No. 343,459

Claims priority, application Switzerland March 26, 1952

6 Claims. (Cl. 24—205.1)

Concealed slide-fasteners are known whose slide-fastener elements, designed to accommodate the thickener edge of a supporting tape, are hookshaped. A characteristic of these known slide-fasteners is that the supporting tapes are wrapped round, and cover, the free outer legs of the slide-fastener element hooks. Slide-fasteners of this known type, when closed, present to the observer the appearance of an ordinary abutting seam, and the particular advantage of this known slide-fastener resides in the fact that the material of the garment concerned can be so attached to the slide-fastener that when the garment is closed the abutting edges of the said material are brought so close together that the impression of a real seam is produced. In view of the peculiarity described of the aforesaid slide-fastener, the coloration of the supporting tapes and of the slide-fastener elements slider hooks is immaterial because the components of the slide-fastener are not visible at all from the exterior when the garment is completed.

In view of the fact that this known slide-fastener also possesses other significant advantages, such for example as that the metallic slider hooks are protected from weather influences, and in view also of other advantages, especially where the slide-fastener is used on suitcases, bags, and the like—the protection of the slide fastener elements from the effects of external impacts and other sources of injury owing to the double screening of the slide fastener elements—it is reasonable to expect that such slide-fasteners will be used in large numbers and be frequently manipulated. This fact prompted the inventor of the said known slide-fastener to devote special attention to ensuring that the aforesaid slide-fasteners are able to stand up to the most diversified stresses and can be operated easily and without hitch even by the most clumsy of persons. A means of achieving this is inherent in the feature of the slide-fastener that it is invisible from the exterior, since this feature enables the slide-fastener to be made of more ample dimensions, and therefore more robustly. In addition, experiments conducted by the inventor have yielded the fact that a substantial improvement in the properties of the slide-fastener is achieved by providing guide-cheeks or guide-shoulders on the central triangular abutment or dividing member of the slider, said guide-cheeks or guide-shoulders promoting the alignment of the slide-fastener elements when the slide-fastener is being brought into engagement, i. e., closed; for the fact has to be allowed for that many users of slide-fasteners do not always manipulate the latter with special care or gentleness. Examples illustrating this fact are the use of such slide-fasteners for army purposes, their use by sportsmen and sportswomen, children, workers in rough types of employment, and by any person in a hurry. In such cases the new method of introducing the slide-fastener elements into and releasing them from the slider is an effective remedy.

The inventor's experiments have also shown that it

2

is expedient to provide the guide-shoulders or guide-cheeks not only on the parallel lateral faces, but also on the forwardly converging faces of the closing triangle or central abutment. In this connection it is also advantageous, in the realization of the invention, for the guide-cheeks provided on the closing triangle to be of a cross-sectional area diminishing progressively in the forward direction and to merge into the tip of the triangle. This arrangement is expedient because it excludes all and any contact of the slider with the supporting tapes or with the material of the garment attached thereto.

It is self-evident that the guide-cheeks or guide-shoulders of the central abutment of the slider place somewhat heavier stresses on the slide-fastener as such, especially in respect of the aligning action. In order to accommodate these stresses in all cases, and to ensure with certainty that the supporting tapes are held immovable in the hooks of the slide-fastener elements, a further inventive idea resides in the fact that the free end of the hook-shaped slide-fastener element is provided with an inwardly directed projection, a beading, a rounded face or the like which places itself into the hollow or throat between the tape edge thickening and the supporting tape proper. The aforesaid projections place themselves like locking bars behind the thickened edge of the supporting tape and hold the latter firmly and reliably without in any way impairing or damaging the structure of the supporting tape.

The inventor's experiments have also shown that reliability in service and long useful life are also substantially promoted, even under the most unfavourable conditions, if one end or both ends of the entry channels of the slider are widened in order on the one hand to increase the strength of these highly-stressed ends and flanks and on the other hand to provide more clearance for the entry and exit of the slide-fastener elements in a direction deviating from the straight. Another result of this increase in strength is that the flanks of the slider cannot change their shape, a phenomenon which is frequently observable in ordinary sliders. It is a fault widely complained of that ordinary sliders widen somewhat after fairly prolonged use and that as a result the slide-fastener elements do not engage properly. This condition quickly leads to the slide-fastener becoming completely unserviceable.

The inventive design of the slide-fastener, as it emerges from the above explanations, is also fully reliable in service in the sense that the slider does not—as occurs in ordinary slide-fasteners—chafe through the woven supporting tape outside of the slide-fastener elements. The inventive design avoids any contact between the parts of the slider on the one hand and the supporting tape, or the material attached to the latter, on the other. This is above all due to the fact that the central abutment of the slider is positioned at an adequate distance from the supporting tapes, i. e., from the material of the garment, etc., in every position of engagement. (The central abutment is isolated and in the slide-fasteners for practical use manufactured according to the invention is located at a distance of about two or more millimetres from the selvages of the material). The interlocking of the slide-fastener elements, finally, has been improved by an elongated rectangular shape being chosen for the engaging projections and recesses proper, the plane of the rectangle being perpendicular to the plane of the supporting tapes, i. e., of the material. This shape reliably prevents the unhooking or tilting of the slide-fastener elements.

Further details of the invention will become apparent

3

from the following description of a few embodiments depicted in the drawings, in which latter:

Figure 1 is a sectional view through a slide-fastener according to the invention, in the closed condition, with pieces of material attached by stitching;

Figure 2 is a sectional view through the slider;

Figure 3 is a plan view of the slider; and

Figure 4 shows a slide fastener in accordance with the invention, in the semi-closed condition.

In conformity with what has been expounded above, Figure 1 shows the inwardly directed projection of the hook-shaped supporting element. The projection 1 places itself in the hollow or throat 3 located between the thickening 4 and the supporting tape 5. The projection 1 acts as an additional clamping device and ensures that the heaviest stresses which are likely to occur during the manipulation of the slide-fastener, and in particular such stresses as are provoked by guide-shoulders or guide-cheeks—to be discussed hereunder—of the central abutment of the slider, are accommodated with certainty.

Another essential detail illustrated by Figure 1 is the elongated rectangular form 6 of the projections and recesses of the slide-fastener elements. The longitudinal axis I of the said engaging projections and recesses is perpendicular to the plane of the supporting tapes, i. e., to the pieces of material sewn thereto.

The aforementioned guide-shoulders or guide-cheeks are indicated by the numeral 7 in Figures 2 and 3. They are provided at a suitable level on the central abutment 8 of the slider for engaging the top surfaces of the inner ends 2 of the fastener elements to guide them into or out of engagement in proper relation when the slider is moved longitudinally of the fastener tapes 5.

The guide-shoulders or guide-cheeks provided on the so-called closing triangle 9 converge, as is clearly shown in Figure 3, towards the tip of the triangle and at the same time progressively diminish in cross-section; they practically merge into the tip. The cross-sectional shape of the said guide-cheeks is preferably convex or rounded, as shown in Figure 2. The said guide-cheeks act similarly to threading tongues, since they contact the fastener elements and ensure that the entering and emerging slide-fastener elements engage and disengage at the desired point. The inventor's numerous experiments have revealed that the manipulation of a slide-fastener equipped with such a slider takes place without hindrance of any kind from the material of cloth, and practically without effort. Another feature peculiar to the slider described is that the exit or entry end, or both ends, of the flanks 10 is/are reinforced and is/are so made as to lead outwards (see 11 and 12). This principle of design on the one hand allows for the deviations of the slide-fastener elements from the rectilinear direction of travel during manipulation; in the events of the slide-fastener elements changing their position substantially, there is still sufficient clearance to exclude the possibility of the slide-fastener elements from being uncovered at the edges of the slider. Moreover, the thickenings at the said ends substantially improve the strength characteristics of the slider. Even with rough handling, as the inventor's experiments have shown, it is practically impossible to distort the slider, which is equivalent to saying that the slide-fastener elements always engage faultlessly. This is a substantial advantage over ordinary slide-fasteners, which become unserviceable as soon as the slider has lost its shape because the slide-fastener elements then no longer engage properly.

In the closed condition the slide-fastener is, as is shown in Figure 4, completely invisible to the external observer. The pieces of material attached to the slide-fastener close up against one another as though they were attached to one another by a real seam. It is obvious that it is now not necessary, as it formerly was, to select, for the assembly of the slide-fastener, slide-fastener elements of as inconspicuous a size as possible. It is now possible to

4

use more amply dimensioned slide-fasteners, without this fact being observable from the exterior. It is, therefore, no longer necessary to keep in stock slide-fasteners of the most varied colours.

What is claimed is:

1. In combination in a concealed slide fastener, a pair of cloth members to be separably joined, a series of fasteners secured to each of said members for interlocking cooperation with the fasteners on the other member, each said fastener having an inner end for said interlocking cooperation and an outer end having means thereon securing a respective cloth member thereto in an upwardly extending and overlapping position relative to the outer end of said fastener to position the edges of the cloth members in tight abutting engagement with each other and snugly overlapping the inner ends of the fasteners when the fasteners are in interlocking position, a slider including a body member having a triangular central guide abutment projecting upwardly therefrom having a pair of side walls converging in one direction longitudinally of the body member substantially to a first point for guiding the inner ends of the fasteners into and out of interlocking engagement, a pair of outer flanks extending upwardly from said body for engaging and guiding the outer ends of said fasteners and causing the inner end of said fasteners to engage said triangular guide abutment, the converging side walls of said abutment having guide shoulders thereon extending outwardly therefrom and spaced from said body member for holding the inner ends of the fasteners in aligned position against the body member, said guide shoulders converging in said one direction substantially to a point longitudinally of said body member no further in said one direction than said first point whereby wear on the cloth members by projecting guide shoulders during opening and closing of the slide fastener is prevented.

2. A slide fastener constructed in accordance with claim 1, wherein said guide shoulders have their outer projecting edges arcuately rounded.

3. A slide fastener constructed in accordance with claim 1 wherein said outer ends of said fasteners are arcuate about a center line extending generally parallel to the longitudinal axis of the series of fasteners and wherein said outer flanks are substantially cylindrical longitudinally of the slider for snugly cooperating with the arcuate outer ends of the fasteners, and wherein said flanks are outwardly flared at the ends of the slider.

4. In combination in a concealed slide fastener, a pair of cloth members to be separably joined, a series of fasteners secured to each of said members for interlocking cooperation with the fasteners on the other member, each said fastener having an inner end for said interlocking cooperation and an outer end having means thereon securing a respective cloth member thereto in an upwardly extending and overlapping position relative to the outer end of said fastener to position the edges of the cloth members in tight abutting engagement with each other and snugly overlapping the inner ends of the fasteners when the fasteners are in interlocking position, a slider including a body member having a triangular central guide abutment projecting upwardly therefrom having a pair of side walls converging in one direction longitudinally of the body member substantially to a first point for guiding the inner ends of the fasteners into and out of interlocking engagement, a pair of outer flanks extending upwardly from said body for engaging and guiding the outer ends of said fasteners and causing the inner end of said fasteners to engage said triangular guide abutment, the converging side walls of said abutment having guide shoulders thereon extending outwardly therefrom and spaced from said body member for holding the inner ends of the fasteners in aligned position against the body member, said guide shoulders converging in said one direction and substantially merging into the said sides of said triangular abutment substantially coincident with

5

the point of convergence thereof whereby wear on the cloth members by projecting guide shoulders during opening and closing of the slide fastener is prevented.

5. In combination in a concealed slide fastener, a pair of cloth members to be separably joined, a series of fasteners secured to each of said members for interlocking cooperation with the fasteners on the other member, each said fastener having an inner end for said interlocking cooperation and an outer end having means thereon securing a respective cloth member thereto in an upwardly extending and overlapping position relative to the outer end of said fastener to position the edges of the cloth members in tight abutting engagement with each other and snugly overlapping the inner ends of the fasteners when the fasteners are in interlocking position, a slider including a body member having a triangular central guide abutment projecting upwardly therefrom having a pair of side walls converging in one direction longitudinally of the body member substantially to a first point for guiding the inner ends of the fasteners into and out of interlocking engagement, a pair of outer flanks extending upwardly from said body for engaging and guiding the outer ends of said fasteners and causing the inner end of said fasteners to engage said triangular guide abutment, the converging side walls of said abutment having guide shoulders thereon extending outwardly therefrom and spaced from said body member for holding the inner ends of the fasteners in aligned position against the body member, said guide shoulders converging in said one direction toward a point within the confines of said triangular abutment and substantially on the longitudinal axis thereof whereby wear on the cloth members by projecting guide shoulders during opening and closing of the slide fastener is prevented.

6. In combination in a concealed slide fastener, a pair of cloth members to be separably joined, a series of fasteners secured to each of said members for interlocking cooperation with the fasteners on the other member, each said fastener having an inner end for said interlocking

6

cooperation and an outer end having means thereon securing a respective cloth member thereto in an upwardly extending and overlapping position relative to the outer end of said fastener to position the edges of the cloth members in tight abutting engagement with each other and snugly overlapping the inner ends of the fasteners when the fasteners are in interlocking position, a slider including a body member having a triangular central guide abutment projecting upwardly therefrom having a pair of side walls converging in one direction longitudinally of the body member substantially to a first point for guiding the inner ends of the fasteners into and out of interlocking engagement, a pair of outer flanks extending upwardly from said body for engaging and guiding the outer ends of said fasteners and causing the inner end of said fasteners to engage said triangular guide abutment, the converging side walls of said abutment having guide shoulders thereon extending outwardly therefrom and spaced from said body member for holding the inner ends of the fasteners in aligned position against the body member, said guide shoulders converging in said one direction toward a second point at a greater rate than the rate of convergence of said side walls of the triangular abutment, said first point being at least as far in said one direction as said second point.

References Cited in the file of this patent

UNITED STATES PATENTS

| | | |
|-----------|--------------|---------------|
| 2,032,858 | Schaper | Mar. 3, 1936 |
| 2,120,924 | Stillschweig | June 14, 1938 |
| 2,124,206 | Mulka | July 19, 1938 |
| 2,193,080 | Soave | Mar. 12, 1940 |
| 2,306,873 | Feist | Dec. 29, 1942 |
| 2,496,878 | Krupp | Feb. 7, 1950 |
| 2,535,391 | Clarke | Dec. 26, 1950 |

FOREIGN PATENTS

| | | |
|---------|-------------|---------------|
| 263,022 | Switzerland | Aug. 15, 1949 |
|---------|-------------|---------------|